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Fig. 6A

C.anc.env (subtype C ancestral env. The amino acid sequence is
different from Los Alamos Database August 2002)

```
GCCGCCATGCGCGTGATGGGCATCCTGCGCAACTGCCAGCAGTGGTGGAT
CTGGGGCATCCTGGGCTTCTGGATGCTGATGATCTGCTCCGTGGTGGGCA
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CAACGTGTGGGCCACCCACGCCCTGCGTGCCCACCGACCCCAACCCCCAGG
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CCTGTTCTACCGCCTGGACATCGTGCCCCTGAACGAGAACTCCTCCGAGT
ACCGCCTGATCAACTGCAACACCTCCGCCATCACCCAGGCCTGCCCCAAG
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CATCCTGAAGTGCAACAACAAGACCTTCAACGGCACCGGCCCCTGCAACA
ACGTGTCCACCGTGCAGTGCACCCACGGCATCAAGCCCGTGGTGTCCACC
CAGCTGCTGCTGAACGGCTCCCTGGCCGAGGAGGAGATCATCATCCGCTC
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CGCATCGGCCCCGGCCAGACCTTCTACGCCACCGGCGACATCATCGGCGA
CATCCGCCAGGCCCACTGCAACATCTCCGAGGACAAGTGGAACAAGACCC
TGCAGCAGGTGGCCGAGAAGCTGGGCAAGCACTTCCCCAACAAGACCATC
ACCTTCGAGCCCTCCTCCGGCGGCGACCTGGAGATCACCACCCACTCCTT
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CCACCTACAACAACAACACCAACTCCAACTCCACCATCACCCTGCCCTGC
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GCCGCGTGGTGGAGCGCGAGAAGCGCGCCGTGGGCCTGGGCGCCGTGTTC
CTGGGCTTCCTGGGCGCCGCCGGCTCCACCATGGGCGCCGCCTCCATCAC
CCTGACCGTGCAGGCCCGCCAGCTGCTGTCCGGCATCGTGCAGCAGCAGT
CCAACCTGCTGCGCGCCATCGAGGCCCAGCAGCACATGCTGCAGCTGACC
GTGTGGGGCATCAAGCAGCTGCAGGCCCGCGTGCTGGCCATGGAGCGCTA
CCTGAAGGACCAGCAGCTGCTGGGCATCTGGGGCTGCTCCGGCAAGCTGA
TCTGCACCACCGCCGTGCCCTGGAACTCCTCCTGGTCCAACCAAGTCCCTG
GACGACATCTGGGACAACATGACCTGGATGGAGTGGGACCGCGAGATCTC
CAACTACACCGACACCATCTACCGCCTGCTGGAGGAGTCCCAGAACCAGC
AGGAGAAGAACGAGCAGGACCTGCTGGCCCTGGACTCCTGGGAGAACCTG
TGGAACTGGTTCGACATCACCAACTGGCTGTGGTACATCAAGATCTTCAT
CATGATCGTGGGCGGCCTGATCGGCCTGCGCATCATCTTCGCCGTGCTGT
CCATCGTGAACCGCGTGCGCCAGGGCTACTCCCCCCTGTCCTTCCAGACC
CTGACCCCCAACCCCCGCGGCCCCGACCGCCTGGAGCGCATCGAGGAGGA
GGGCGGCGAGCAGGACCGCGACCGCTCCATCCGCCTGGTGTCCGGCTTCC
TGGCCCTGGCCTGGGACGACCTGCGCTCCCTGTGCCTGTTCTCCTACCAC
CGCCTGCGCGACTTCATCCTGATCGCCGCCGCCGCACCGTGGAGCTGCTGGG
CCGCTCCCTCCCTGCGCGGCCTGCAGCGCGGCTGGGAGGCCCTGAAGTACC
TGGGCTCCCTGGTGCAGTACTGGGGCCAGGAGCTGAAGAAGTCCGCCATC
TCCCTGCTGGACACCATCGCCATCGCCGTGGCCGAGGGCACCGACCGCAT
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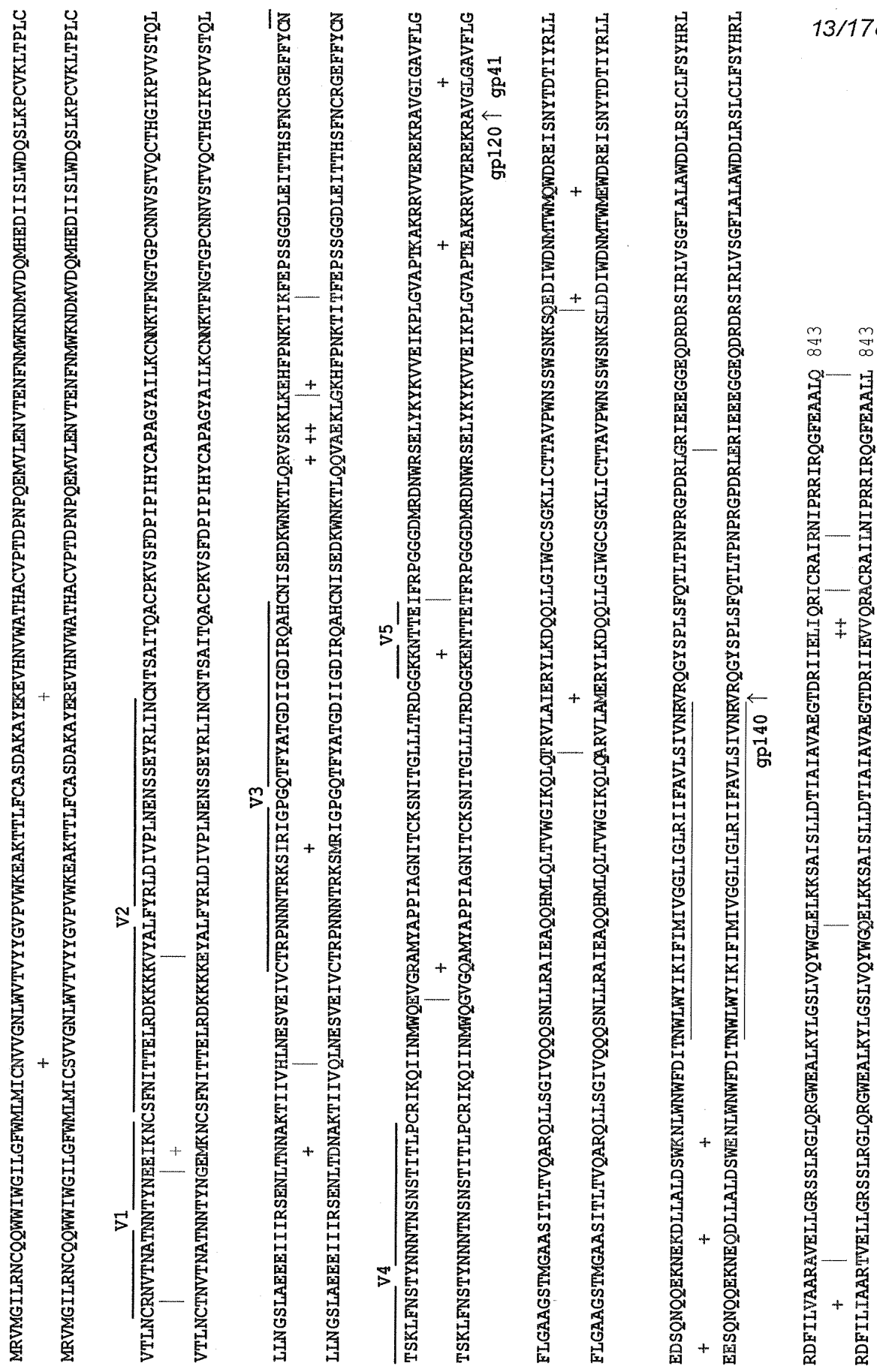
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Fig. 6B

C.con.env (subtype C consensus env. The amino acid sequence is different from Los Alamos Database August 2002)

```
GCCGCCATGCGCGTGATGGGCATCCTGCGCAACTGCCAGCAGTGGTGGAT
CTGGGGCATCCTGGGCTTCTGGATGCTGATGATCTGCAACGTGGTGGGCA
ACCTGTGGGTGACCGTGTACTACGGCGTGCCCGTGTGGAAGGAGGCCAAG
ACCACCCTGTTCTGCGCCTCCGACGCCAAGGCCTACGAGAAGG AGGTGCA
CAACGTGTGGGCCACCCACGCCTGCGTGCCCACCGACCCCAACCCCCAGG
AGATGGTGCTGGAGAACGTGACCGAGAACTTCAACATGTGGAAGAACGAC
ATGGTGGACCAGATGCACGAGGACATCATCTCCCTGTGGGACCAGTCCCT
GAAGCCCTGCGTGAAGCTGACCCCCCTGTGCGTGACCCTGAACTGCCGCA
ACGTGACCAACGCCACCAACAACACCTACAACGAGGAGATCAAG AACTGC
TCCTTCAACATCACCACCGAGCTGCGCGACAAGAAGAAGAAGGTGTACGC
CCTGTTCTACCGCCTGGACATCGTGCCCCTGAACGAGAACTCCTCCGAGT
ACCGCCTGATCAACTGCAACACCTCCGCCATCACCCAGGCCTGCCCCAAG
GTGTCCTTCGACCCCATCCCCATCCACTACTGCGCCCCCGCCGGCTACGC
CATCCTGAAGTGCAACAACAAGACCTTCAACGGCACCGGCCCCTG CAACA
ACGTGTCCACCGTGCAGTGCACCCACGGCATCAAGCCCGTGGTGTCCACC
CAGCTGCTGCTGAACGGCTCCCTGGCCGAGGAGGAGATCATCATCCGCTC
CGAGAACCTGACCAACAACGCCAAGACCATCATCGTGCACCTGAACGAGT
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CGCATCGGCCCCGGCCAGACCTTCTACGCCACCGGCGACATCATCG GCGA
CATCCGCCAGGCCCACTGCAACATCTCCGAGGACAAGTGGAACAAGACCC
TGCAGCGCGTGTCCAAGAAGCTGAAGGAGCACTTCCCCAACAAGACCATC
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CAACTGCCGCGGCGAGTTCTTCTACTGCAACACCTCCAAGCTGTTCAACT
CCACCTACAACAACAACACCAACTCCAACTCCACCATCACCCTGCCC TGC
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CGCCCCCCCCATCGCCGGCAACATCACCTGCAAGTCCAACATCACCGGCC
TGCTGCTGACCCGCGACGGCGGCAAGAAGAACACCACCGAGATCTTCCGC
CCCGGCGGCGGCGACATGCGCGACAACTGGCGCTCCGAGCTGTACAAGTA
CAAGGTGGTGGAGATCAAGCCCCTGGGCGTGGCCCCCACCAAGGCCAA GC
GCCGCGTGGTGGAGCGCGAGAAGCGCGCCGTGGGCATCGGCGCCGTGTTC
CTGGGCTTCCTGGGCGCCGCCGGCTCCACCATGGGCGCCGCCTCCATCAC
CCTGACCGTGCAGGCCCGCCAGCTGCTGTCCGGCATCGTGCAGCAGCAGT
CCAACCTGCTGCGCGCCATCGAGGCCCAGCAGCACATGCTGCAGCTGACC
GTGTGGGGCATCAAGCAGCTGCAGACCCGCGTGCTGGCCATCGAGCGCTA
CCTGAAGGACCAGCAGCTGCTGGGCATCTGGGGCTGCTCCGGCAAGCTGA
TCTGCACCACCGCCGTGCCCTGGAACTCCTCCTGGTCCAACAAGTCCCAG
GAGGACATCTGGGACAACATGACCTGGATGCAGTGGGACCGCGAGATCTC
CAACTACACCGACACCATCTACCGCCTGCTGGAGGACTCCCAGAACCAGC
AGGAGAAGAACGAGAAGGACCTGCTGGCCCTGGACTCCTGGAAGAACCTG
TGGAACTGGTTCGACATCACCAACTGGCTGTGGTACATCAAGATCTTCAT
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CCATCGTGAACCGCGTGCGCCAGGGCTACTCCCCCCTGTCCTTCCAGACC
CTGACCCCCAACCCCCGCGGCCCCGACCGCCTGGGCCGCATCGAGGAGGA
GGGCGGCGAGCAGGACCGCGACCGCTCCATCCGCCTGGTGTCCGGCTTCC
TGGCCCTGGCCTGGGACGACCTGCGCTCCCTGTGCCTGTTCTCCTACCAC
CGCCTGCGCGACTTCATCCTGGTGGCCGCCCGCGCCGTGGAGCTGCTGGG
CCGCTCCTCCCTGCGCGGCCTGCAGCGCGGCTGGGAGGCCCTGAAGTACC
TGGGCTCCCTGGTGCAGTACTGGGGCCTGGAGCTGAAGAAGTCCGCCATC
TCCCTGCTGGACACCATCGCCATCGCCGTGGCCGAGGGCACCGACCGCAT
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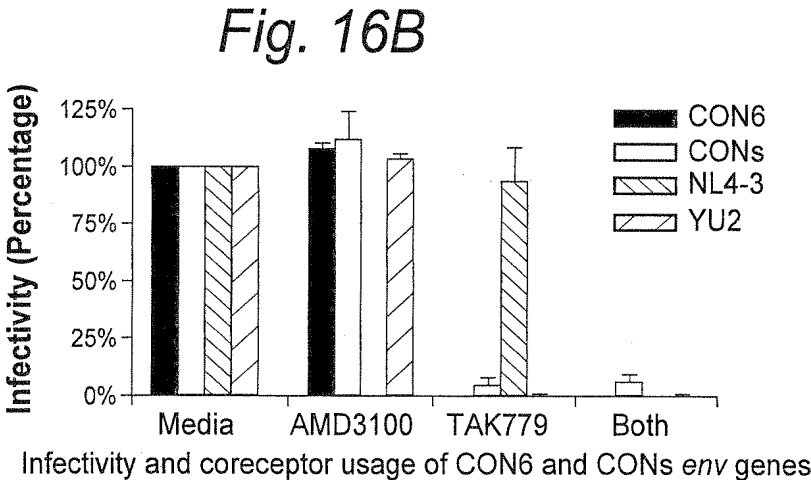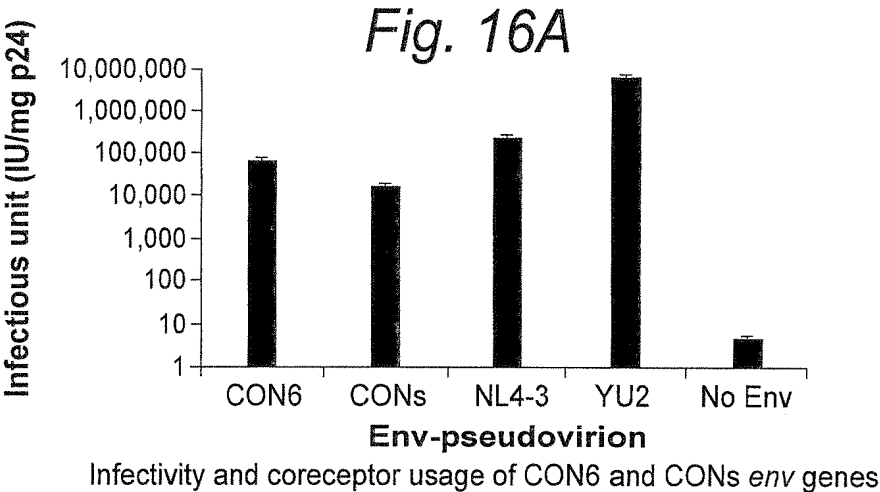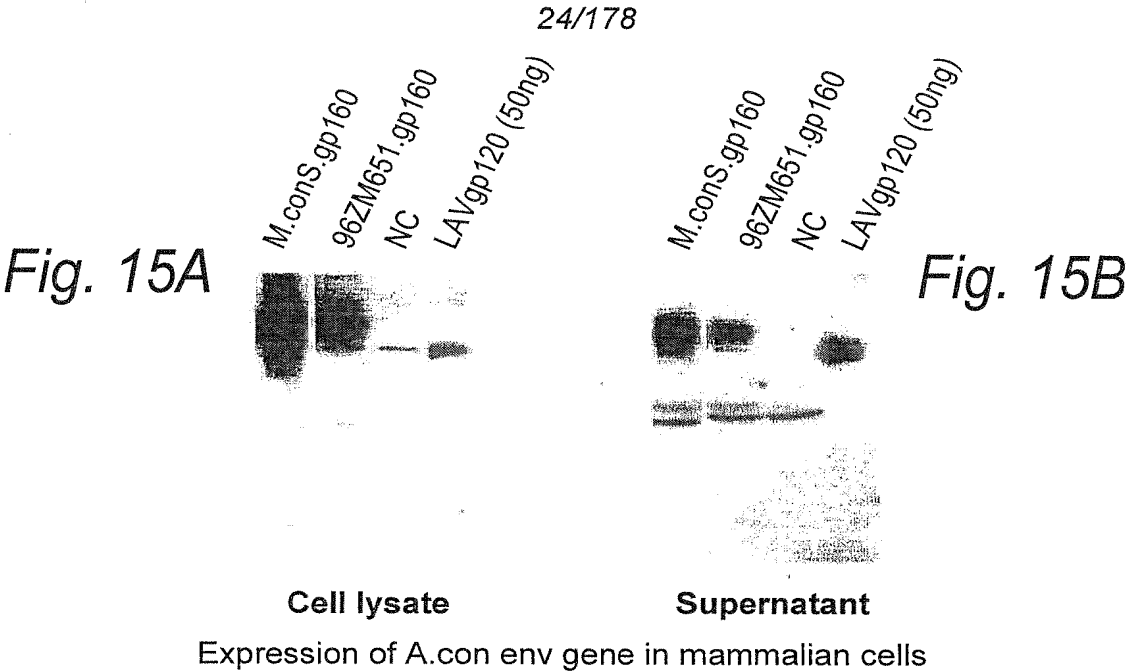
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Fig. 8

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MRVMGILRNCQQWWIWGILGFWMLMICSVVGNLWVTVYYGVPVWKEAKTTLFCASDAKAYEREVHNVWATHACVPTDPNPQEMVLENVTENFNMWKNDMVDQMHEDIISLWDQSLKPCVKLTPLC

V1   V2
VTLNCRNVTNATNNTYNEEIKNCSFNITTELRDKKKKVYALFYRLDIVPLNENSSEYRLINCNTSAITQACPKVSFDPIPIHYCAPAGYAILKCNKKTFNGTGPCNNVSTVQCTHGIKPVVSTQL
VTLNCTNVTNATNNTYNGEMKNCSFNITTELRDKKKKEYALFYRLDIVPLNENSSEYRLINCNTSAITQACPKVSFDPIPIHYCAPAGYAILKCNKKTFNGTGPCNNVSTVQCTHGIKPVVSTQL

                                                V3
LLNGSLAEEEIIIRSENLTNNAKTIIVHLNESVEIVCTRPNNNTRKSIRIGPGQTFYATGDIIGDIRQAHCNISEDKWNKTLQRVSKKLKEHFPNKTIKFEPSSGGDLEITTHSFNCRGEFFYCN
LLNGSLAEEEIIIRSENLTNNAKTIIVQLNESVEIVCTRPNNNTRKSMRIGPGQTFYATGDIIGDIRQAHCNISEDKWNKTLQQVAEKLGKHFPNKTITFEPSSGGDLEITTHSFNCRGEFFYCN

V4   V5
TSKLFNSTYNNNTNSNSTITLPCRIKQIINMWQEVGRAMYAPPIAGNITCKSNITGLLLTRDGGKKNTTEIFRPGGGDMRDNWRSELYKYKVVEIKPLGVAPTKAKRRVVEREKRAVGIGAVFLG
TSKLFNSTYNNNTNSNSTITLPCRIKQIINMWQEVGQAMYAPPIAGNITCKSNITGLLLTRDGGKENTTETFRPGGGDMRDNWRSELYKYKVVEIKPLGVAPTEAKRRVVEREKRAVGLGAVFLG
                                                                                                        gp120 ↑ gp41

FLGAAGSTMGAASITLTVQARQLLSGIVQQQSNLLRAIEAQQHMLQLTVWGIKQLQTRVLAIERYLKDQQLLGIWGCSGKLICTTAVPWNSSWSNKSQEDIWDNMTWMQWDREISNYTDTIYRLL
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EDSQNQQEKNEKDLLALDSWKNLWNWFDITNWLWYIKIFIMIVGGLIGLRIIFAVLSIVNRVRQGYSPLSFQTLTPNPRGPDRLGRIEEEGGEQDRDRSIRLVSGFLALAWDDLRSICLFSYHRL
EESQNQQEKNEQDLLALDSWENLWNWFDITNWLWYIKIFIMIVGGLIGLRIIFAVLSIVNRVRQGYSPLSFQTLTPNPRGPDRLERIEEEGGEQDRDRSIRLVSGFLALAWDDLRSICLFSYHRL
                                                            gp140 ↑

RDFILVAARAVELLGRSSLRGLQRGWEALKYLGSLVQYWGLELKKSAISLLDTIAIAVAEGTDRIIELIQRICRAIRNIPRRIRQGFEAALQ 843
RDFILIAARTVELLGRSSLRGLQRGWEALKYLGSLVQYWGQELKKSAISLLDTIAIAVAEGTDRIIEVVQRACRAILNIPRRIRQGFEAALL 843

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Fig. 14B

CONs.env (gorup M consensus env gene. This one contain the consensus sequence for variable regions in env gene. The identical amino acid sequences as in the public domain)

```
GCCGCCGCCATGCGCGTGCGCGGCATCCAGCGCAACTGCCAGCACCTGTG
GCGCTGGGGCACCCTGATCCTGGGCATGCTGATGATCTGCTCCGCCGCCG
AGAACCTGTGGGTGACCGTGTACTACGGCGTGCCCGTGTGGAAGGAGGCC
AACACCACCCTGTTCTGCGCCTCCGACGCCAAGGCCTACGACACCGAGGT
GCACAACGTGTGGGCCACCCACGCCTGCGTGCCCACCGACCCCAACCCCC
AGGAGATCGTGCTGGAGAACGTGACCGAGAACTTCAACATGTGGAAGAAC
AACATGGTGGAGCAGATGCACGAGGACATCATCTCCCTGTGGGACCAGTC
CCTGAAGCCCTGCGTGAAGCTGACCCCCCTGTGCGTGACCCTGAACTGCA
CCAACGTGAACGTGACCAACACCACCAACAACACCGAGGAGAAGGGCGAG
ATCAAGAACTGCTCCTTCAACATCACCACCGAGATCCGCGACAAGAAGCA
GAAGGTGTACGCCCTGTTCTACCGCCTGGACGTGGTGCCCATCGACGACA
ACAACAACAACTCCTCCAACTACCGCCTGATCAACTGCAACACCTCCGCC
ATCACCCAGGCCTGCCCCAAGGTGTCCTTCGAGCCCATCCCCATCCACTA
CTGCGCCCCCGCCGGCTTCGCCATCCTGAAGTGCAACGACAAGAAGTTCA
ACGGCACCGGCCCCTGCAAGAACGTGTCCACCGTGCAGTGCACCCACGGC
ATCAAGCCCGTGGTGTCCACCCAGCTGCTGCTGAACGGCTCCCTGGCCGA
GGAGGAGATCATCATCCGCTCCGAGAACATCACCAACAACGCCAAGACCA
TCATCGTGCAGCTGAACGAGTCCGTGGAGATCAACTGCACCCGCCCCAAC
AACAACACCCGCAAGTCCATCCGCATCGGCCCCGGCCAGGCCTTCTACGC
CACCGGCGACATCATCGGCGACATCCGCCAGGCCCACTGCAACATCTCCG
GCACCAAGTGGAACAAGACCCTGCAGCAGGTGGCCAAGAAGCTGCGCGAG
CACTTCAACAACAAGACCATCATCTTCAAGCCCTCCTCCGGCGGCGACCT
GGAGATCACCACCCACTCCTTCAACTGCCGCGGCGAGTTCTTCTACTGCA
ACACCTCCGGCCTGTTCAACTCCACCTGGATCGGCAACGGCACCAAGAAC
AACAACAACACCAACGACACCATCACCCTGCCCTGCCGCATCAAGCAGAT
CATCAACATGTGGCAGGGCGTGGGCCAGGCCATGTACGCCCCCCCCATCG
AGGGCAAGATCACCTGCAAGTCCAACATCACCGGCCTGCTGCTGACCCGC
GACGGCGGCAACAACAACACCAACGAGACCGAGATCTTCCGCCCCGGCGG
CGGCGACATGCGCGACAACTGGCGCTCCGAGCTGTACAAGTACAAGGTGG
TGAAGATCGAGCCCCTGGGCGTGGCCCCCACCAAGGCCAAGCGCCGCGTG
GTGGAGCGCGAGAAGCGCGCCGTGGGCATCGGCGCCGTGTTCCTGGGCTT
CCTGGGCGCCGCCGGCTCCACCATGGGCGCCGCCTCCATCACCCTGACCG
TGCAGGCCCGCCAGCTGCTGTCCGGCATCGTGCAGCAGCAGTCCAACCTG
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CATCAAGCAGCTGCAGGCCCGCGTGCTGGCCGTGGAGCGCTACCTGAAGG
ACCAGCAGCTGCTGGGCATCTGGGGCTGCTCCGGCAAGCTGATCTGCACC
ACCACCGTGCCCTGGAACTCCTCCTGGTCCAACAAGTCCCAGGACGAGAT
CTGGGACAACATGACCTGGATGGAGTGGGAGCGCGAGATCAACAACTACA
CCGACATCATCTACTCCCTGATCGAGGAGTCCCAGAACCAGCAGGAGAAG
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CAACCCCCGCGGCCCCGACCGCCCCGAGGGCATCGAGGAGGAGGGCGGCG
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CGACTTCATCCTGATCGCCGCCCGCACCGTGGAGCTGCTGGGCCGCAAGG
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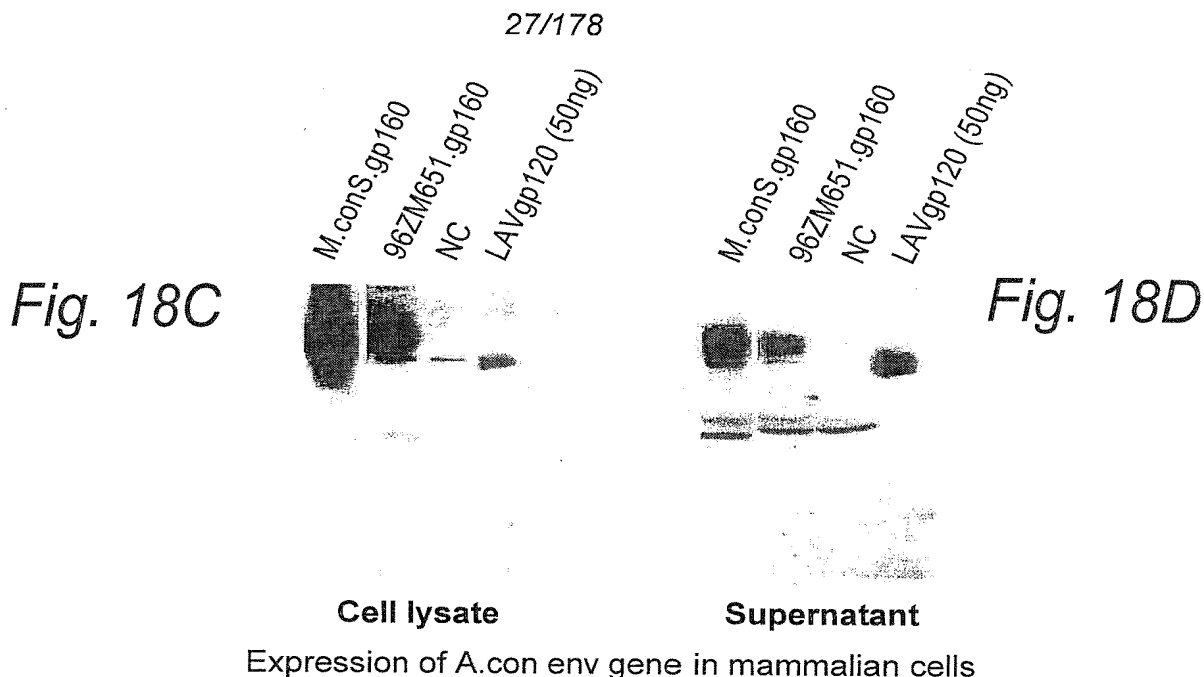
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Fig. 15A

Fig. 15B

Cell lysate

Supernatant

Expression of A.con env gene in mammalian cells

Fig. 16A

Infectivity and coreceptor usage of CON6 and CONs *env* genes

Fig. 16B

Infectivity and coreceptor usage of CON6 and CONs *env* genes

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Fig. 18B

A.con.env (subtype A consensus env. Identical amino acid
sequence to that in the public domain)

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GCCGCCGCCATGCGCGTGATGGGCATCCAGCGCAACTGCCAGCACCTGTG
GCGCTGGGGCACCATGATCCTGGGCATGATCATCATCTGCTCCGCCGCCG
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AGGAGATCAACCTGGAGAACGTGACCGAGGAGTTCAACATGTGGAAGAAC
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GCCATCACCCAGGCCTGCCCCAAGGTGTCCTTCGAGCCCATCCCCATCCA
CTACTGCGCCCCCGCCGGCTTCGCCATCCTGAAGTGCAAGGACAAGGAGT
TCAACGGCACCGGCCCCTGCAAGAACGTGTCCACCGTGCAGTGCACCCAC
GGCATCAAGCCCGTGGTGTCCACCCAGCTGCTGCTGAACGGCTCCCTGGC
CGAGGAGGAGGTGATGATCCGCTCCGAGAACATCACCAACAACGCCAAGA
ACATCATCGTGCAGCTGACCAAGCCCGTGAAGATCAACTGCACCCGCCCC
AACAACAACACCCGCAAGTCCATCCGCATCGGCCCCGGCCAGGCCTTCTA
CGCCACCGGCGACATCATCGGCGACATCCGCCAGGCCCACTGCAACGTGT
CCCGCACCGAGTGGAACGAGACCCTGCAGAAGGTGGCCAAGCAGCTGCGC
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CCTGGAGATCACCACCCACTCCTTCAACTGCGGCGGCGAGTTCTTCTACT
GCAACACCTCCGGCCTGTTCAACTCCACCTGGAACGGCAACGGCACCAAG
AAGAAGAACTCCACCGAGTCCAACGACACCATCACCCTGCCCTGCCGCAT
CAAGCAGATCATCAACATGTGGCAGCGCGTGGGCCAGGCCATGTACGCCC
CCCCCATCCAGGGCGTGATCCGCTGCGAGTCCAACATCACCGGCCTGCTG
CTGACCCGCGACGGCGGCGACAACAACTCCAAGAACGAGACCTTCCGCCC
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TGAAGGACCAGCAGCTGCTGGGCATCTGGGGCTGCTCCGGCAAGCTGATC
TGCACCACCAACGTGCCCTGGAACTCCTCCTGGTCCAACAAGTCCCAGTC
CGAGATCTGGGACAACATGACCTGGCTGCAGTGGGACAAGGAGATCTCCA
ACTACACCGACATCATCTACAACCTGATCGAGGAGTCCCAGAACCAGCAG
GAGAAGAACGAGCAGGACCTGCTGGCCCTGGACAAGTGGGCCAACCTGTG
GAACTGGTTCGACATCTCCAACTGGCTGTGGTACATCAAGATCTTCATCA
TGATCGTGGGCGGCCTGATCGGCCTGCGCATCGTGTTCGCCGTGCTGTCC
GTGATCAACCGCGTGCGCCAGGGCTACTCCCCCCTGTCCTTCCAGACCCA
CACCCCCAACCCCGGCGGCCTGGACCGCCCCGGCCGCATCGAGGAGGAGG
GCGGCGAGCAGGGCCGCGACCGCTCCATCCGCCTGGTGTCCGGCTTCCTG
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ACTCCTCCCTGAAGGGCCTGCGCCTGGGCTGGGAGGGCCTGAAGTACCTG
TGGAACCTGCTGCTGTACTGGGGCCGCGAGCTGAAGATCTCCGCCATCAA
CCTGCTGGACACCATCGCCATCGCCGTGGCCGGCTGGACCGACCGCGTGA
TCGAGATCGGCCAGCGCATCTGCCGCGCCATCCTGAACATCCCCCGCCGC
ATCCGCCAGGGCCTGGAGCGCGCCCTGCTGTAA
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Fig. 18C *Fig. 18D*

Cell lysate **Supernatant**

Expression of A.con env gene in mammalian cells

Fig. 19A

M.con.gag (group M consensus gag. Identical amino acid sequence to that in the public domain)

```
GCCGCCGCCATGGGCGCCCGCGCCTCCGTGCTGTCCGGCGGCAAGCTGGA
CGCCTGGGAGAAGATCCGCCTGCGCCCCGGCGGCAAGAAGAAGTACCGCC
TGAAGCACCTGGTGTGGGCCTCCCGCGAGCTGGAGCGCTTCGCCCTGAAC
CCCGGCCTGCTGGAGACCTCCGAGGGCTGCAAGCAGATCATCGGCCAGCT
GCAGCCCGCCCTGCAGACCGGCTCCGAGGAGCTGCGCTCCCTGTACAACA
CCGTGGCCACCCTGTACTGCGTGCACCAGCGCATCGAGGTGAAGGACACC
AAGGAGGCCCTGGAGAAGATCGAGGAGGAGCAGAACAAGTCCCAGCAGAA
GACCCAGCAGGCCGCCGCCGACAAGGGCAACTCCTCCAAGGTGTCCCAGA
ACTACCCCATCGTGCAGAACCTGCAGGGCCAGATGGTGCACCAGGCCATC
TCCCCCCGCACCCTGAACGCCTGGGTGAAGGTGATCGAGGAGAAGGCCTT
CTCCCCCGAGGTGATCCCCATGTTCTCCGCCCTGTCCGAGGGCGCCACCC
CCCAGGACCTGAACACCATGCTGAACACCGTGGGCGGCCACCAGGCCGCC
ATGCAGATGCTGAAGGACACCATCAACGAGGAGGCCGCCGAGTGGGACCG
CCTGCACCCCGTGCACGCCGGCCCCATCCCCCCCGGCCAGATGCGCGAGC
CCCGCGGCTCCGACATCGCCGGCACCACCTCCACCCTGCAGGAGCAGATC
GCCTGGATGACCTCCAACCCCCCCATCCCCGTGGGCGAGATCTACAAGCG
CTGGATCATCCTGGGCCTGAACAAGATCGTGCGCATGTACTCCCCCGTGT
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GAACTGGATGACCGACACCCTGCTGGTGCAGAACGCCAACCCCGACTGCA
AGACCATCCTGAAGGCCCTGGGCCCCGGCGCCACCCTGGAGGAGATGATG
ACCGCCTGCCAGGGCGTGGGCGGCCCCGGCCACAAGGCCCGCGTGCTGGC
CGAGGCCATGTCCCAGGTGACCAACGCCGCCATCATGATGCAGCGCGGCA
ACTTCAAGGGCCAGCGCCGCATCATCAAGTGCTTCAACTGCGGCAAGGAG
GGCCACATCGCCCGCAACTGCCGCGCCCCCCGCAAGAAGGGCTGCTGGAA
GTGCGGCAAGGAGGGCCACCAGATGAAGGACTGCACCGAGCGCCAGGCCA
ACTTCCTGGGCAAGATCTGGCCCTCCAACAAGGGCCGCCCCGGCAACTTC
CTGCAGTCCCGCCCCGAGCCCACCGCCCCCCCCGCCGAGTCCTTCGGCTT
CGGCGAGGAGATCACCCCCTCCCCCAAGCAGGAGCCCAAGGACAAGGAGC
CCCCCCTGACCTCCCTGAAGTCCCTGTTCGGCAACGACCCCCTGTCCCAG
TAA
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GCCGCCGCCATGCCCCAGATCACCCTGTGGCAGCGCCCCCTGGTGACCAT
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CCCCCGTGAACATCATCGGCCGCAACATGCTGACCCAGATCGGCTGCACC
CTGAACTTCCCCATCTCCCCCATCGAGACCGTGCCCGTGAAGCTGAAGCC
CGGCATGGACGGCCCCAAGGTGAAGCAGTGGCCCCTGACCGAGGAGAAGA
TCAAGGCCCTGACCGAGATCTGCACCGAGATGGAGAAGGAGGGCAAGATC
TCCAAGATCGGCCCCGAGAACCCCTACAACACCCCCATCTTCGCCATCAA
GAAGAAGGACTCCACCAAGTGGCGCAAGCTGGTGGACTTCCGCGAGCTGA
ACAAGCGCACCCAGGACTTCTGGGAGGTGCAGCTGGGCATCCCCCACCCC
GCCGGCCTGAAGAAGAAGAAGTCCGTGACCGTGCTGGACGTGGGCGACGC
CTACTTCTCCGTGCCCCTGGACGAGGACTTCCGCAAGTACACCGCCTTCA
CCATCCCCTCCATCAACAACGAGACCCCCGGCATCCGCTACCAGTACAAC
GTGCTGCCCCAGGGCTGGAAGGGCTCCCCCGCCATCTTCCAGTCCTCCAT
GACCAAGATCCTGGAGCCCTTCCGCACCCAGAACCCCGAGATCGTGATCT
ACCAGTACATGGACGACCTGTACGTGGGCTCCGACCTGGAGATCGGCCAG
CACCGCGCCAAGATCGAGGAGCTGCGCGAGCACCTGCTGCGCTGGGGCTT
CACCACCCCCGACAAGAAGCACCAGAAGGAGCCCCCCTTCCTGTGGATGG
GCTACGAGCTGCACCCCGACAAGTGGACCGTGCAGCCCATCCAGCTGCCC
GAGAAGGACTCCTGGACCGTGAACGACATCCAGAAGCTGGTGGGCAAGCT
GAACTGGGCCTCCCAGATCTACCCCGGCATCAAGGTGAAGCAGCTGTGCA
AGCTGCTGCGCGGCGCCAAGGCCCTGACCGACATCGTGCCCCTGACCGAG
GAGGCCGAGCTGGAGCTGGCCGAGAACCGCGAGATCCTGAAGGAGCCCGT
GCACGGCGTGTACTACGACCCCTCCAAGGACCTGATCGCCGAGATCCAGA
AGCAGGGCCAGGACCAGTGGACCTACCAGATCTACCAGGAGCCCTTCAAG
AACCTCAAGACCGGCAAGTACGCCAAGATGCGCTCCGCCCACACCAACGA
CGTGAAGCAGCTGACCGAGGCCGTGCAGAAGATCGCCACCGAGTCCATCG
TGATCTGGGGCAAGACCCCCAAGTTCCGCCTGCCCATCCAGAAGGAGACC

TGGGAGACCTGGTGGACCGAGTACTGGCAGGCCACCTGGATTCCCGAGTG
GGAGTTCGTGAACACCCCCCCCCTGGTGAAGCTGTGGTACCAGCTGGAGA
AGGAGCCCATCGCCGGCGCCGAGACCTTCTACGTGGACGGCGCCGCCAAC
CGCGAGACCAAGCTGGGCAAGGCCGGCTACGTGACCGACCGCGGCCGCCA
GAAGGTGGTGTCCCTGACCGAGACCACCAACCAGAAAACCGAGCTGCAGG
CCATCCACCTGGCCCTGCAGGACTCCGGCTCCGAGGTGAACATCGTGACC
GACTCCCAGTACGCCCTGGGCATCATCCAGGCCCAGCCCGACAAGTCCGA
GTCCGAGCTGGTGAACCAGATCATCGAGCAGCTGATCAAGAAGGAGAAGG
TGTACCTGTCCTGGGTGCCCGCCCACAAGGGCATCGGCGGCAACGAGCAG
GTGGACAAGCTGGTGTCCACCGGCATCCGCAAGGTGCTGTTCCTGGACGG
CATCGACAAGGCCCAGGAGGAGCACGAGAAGTACCACTCCAACTGGCGCG
CCATGGCCTCCGACTTCAACCTGCCCCCCATCGTGGCCAAGGAGATCGTG
GCCTCCTGCGACAAGTGCCAGCTGAAGGGCGAGGCCATGCACGGCCAGGT
GGACTGCTCCCCCGGCATCTGGCAGCTGGACTGCACCCACCTGGAGGGCA
AGATCATCCTGGTGGCCGTGCACGTGGCCTCCGGCTACATCGAGGCCGAG
GTGATCCCCGCCGAGACCGGCCAGGAGACCGCCTACTTCATCCTGAAGCT
GGCCGGCCGCTGGCCCGTGAAGGTGATCCACACCGACAACGGCTCCAACT
TCACCTCCGCCGCCGTGAAGGCCGCCTGCTGGTGGGCCGGCATCCAGCAG
GAGTTCGGCATCCCCTACAACCCCCAGTCCCAGGGCGTGGTGGAGTCCAT
GAACAAGGAGCTGAAGAAGATCATCGGCCAGGTGCGCGACCAGGCCGAGC
ACCTCAAGACCGCCGTGCAGATGGCCGTGTTCATCCACAACTTCAAGCGC
AAGGGCGGCATCGGCGGCTACTCCGCCGGCGAGCGCATCATCGACATCAT
CGCCACCGACATCCAGACCAAGGAGCTGCAGAAGCAGATCACCAAGATCC
AGAACTTCCGCGTGTACTACCGCGACTCCCGCGACCCCATCTGGAAGGGC
CCCGCCAAGCTGCTGTGGAAGGGCGAGGGCGCCGTGGTGATCCAGGACAA
CTCCGACATCAAGGTGGTGCCCCGCCGCAAGGCCAAGATCATCCGCGACT
ACGGCAAGCAGATGGCCGGCGACGACTGCGTGGCCGGCCGCCAGGACGAG
GACTAA

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Fig. 19C

M.con.nef (group M consensus nef. Identical amino acid sequence to that in the public domain)

```
GCCGCCGCCATGGGCGGCAAGTGGTCCAAGTCCTCCATCGTGGGCTGGCC
CGCCGTGCGCGAGCGCATCCGCCGCACCCACCCCGCCGCCGAGGGCGTGG
GCGCCGTGTCCCAGGACCTGGACAAGCACGGCGCCATCACCTCCTCCAAC
ACCGCCGCCAACAACCCCGACTGCGCCTGGCTGGAGGCCCAGGAGGAGGA
GGAGGAGGTGGGCTTCCCCGTGCGCCCCCAGGTGCCCCTGCGCCCCATGA
CCTACAAGGCCGCCCTGGACCTGTCCCACTTCCTGAAGGAGAAGGGCGGC
CTGGAGGGCCTGATCTACTCCAAGAAGCGCCAGGAGATCCTGGACCTGTG
GGTGTACCACACCCAGGGCTACTTCCCCGACTGGCAGAACTACACCCCCG
GCCCCGGCATCCGCTACCCCCCTGACCTTCGGCTGGTGCTTCAAGCTGGTG
CCCGTGGACCCCGAGGAGGTGGAGGAGGCCAACGAGGGCGAGAACAACTC
CCTGCTGCACCCCATGTGCCAGCACGGCATGGAGGACGAGGAGCGCGAGG
TGCTGATGTGGAAGTTCGACTCCCGCCTGGCCCTGCGCCACATCGCCCGC
GAGCTGCACCCCGAGTACTACAAGGACTGCTAA
```

Fig. 19D

C.con.pol.nuc
```
GCCGCCGCCATGCCCCAGATCACCCTGTGGCAGCGCCCCCTGGTGTCCAT
CAAGGTGGGCGGCCAGATCAAGGAGGCCCTGCTGGCCACCGGCGCCGACG
ACACCGTGCTGGAGGAGATCAACCTGCCCGGCAAGTGGAAGCCCAAGATG
ATCGGCGGCATCGGCGGCTTCATCAAGGTGCGCCAGTACGACCAGATCCT
GATCGAGATCTGCGGCAAGAAGGCCATCGGCACCGTGCTGGTGGGCCCCA
CCCCCGTGAACATCATCGGCCGCAACATGCTGACCCAGCTGGGCTGCACC
CTGAACTTCCCCATCTCCCCCATCGAGACCGTGCCCGTGAAGCTGAAGCC
CGGCATGGACGGCCCCAAGGTGAAGCAGTGGCCCCTGACCGAGGAGAAGA
TCAAGGCCCTGACCGCCATCTGCGAGGAGATGGAGAAGGAGGGCAAGATC
ACCAAGATCGGCCCCGAGAACCCCTACAACACCCCCGTGTTCGCCATCAA
GAAGAAGGACTCCACCAAGTGGCGCAAGCTGGTGGACTTCCGCGAGCTGA
ACAAGCGCACCCAGGACTTCTGGGAGGTGCAGCTGGGCATCCCCCACCCC
GCCGGCCTGAAGAAGAAGAAGTCCGTGACCGTGCTGGACGTGGGCGACGC
CTACTTCTCCGTGCCCCTGGACGAGGGCTTCCGCAAGTACACCGCCTTCA
CCATCCCCTCCATCAACAACGAGACCCCCGGCATCCGCTACCAGTACAAC
GTGCTGCCCCAGGGCTGGAAGGGCTCCCCCGCCATCTTCCAGTCCTCCAT
GACCAAGATCCTGGAGCCCTTCCGCGCCCAGAACCCCGAGATCGTGATCT
ACCAGTACATGGACGACCTGTACGTGGGCTCCGACCTGGAGATCGGCCAG
CACCGCGCCAAGATCGAGGAGCTGCGCGAGCACCTGCTGAAGTGGGGCTT
CACCACCCCCGACAAGAAGCACCAGAAGGAGCCCCCTTCCTGTGGATGG
GCTACGAGCTGCACCCCGACAAGTGGACCGTGCAGCCCATCCAGCTGCCC
GAGAAGGACTCCTGGACCGTGAACGACATCCAGAAGCTGGTGGGCAAGCT
GAACTGGGCCTCCCAGATCTACCCCGGCATCAAGGTGCGCCAGCTGTGCA
AGCTGCTGCGCGGCGCCAAGGCCCTGACCGACATCGTGCCCCTGACCGAG
GAGGCCGAGCTGGAGCTGGCCGAGAACCGCGAGATCCTGAAGGAGCCCGT
GCACGGCGTGTACTACGACCCCTCCAAGGACCTGATCGCCGAGATCCAGA
AGCAGGGCCACGACCAGTGGACCTACCAGATCTACCAGGAGCCCTTCAAG
AACCTCAAGACCGGCAAGTACGCCAAGATGCGCACCGCCCACACCAACGA
CGTGAAGCAGCTGACCGAGGCCGTGCAGAAGATCGCCATGGAGTCCATCG
TGATCTGGGGCAAGACCCCCAAGTTCCGCCTGCCCATCCAGAAGGAGACC
TGGGAGACCTGGTGGACCGACTACTGGCAGGCCACCTGGATTCCCGAGTG
GGAGTTCGTGAACACCCCCCCCCTGGTGAAGCTGTGGTACCAGCTGGAGA
AGGAGCCCATCGCCGGCGCCGAGACCTTCTACGTGGACGGCGCCGCCAAC
```

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```
CGCCGAGACCAAGATCGGCAAGGCCGGCTACGTGACCGACGCGGCGGCCA
GAAGATCGTGTCCCTGACCGAGACCACCACCAACCAGAAAACCGAGCTGCAGG
CCATCCAGCTGCCCTGCGAGGACTTCCGGCTCCGAGGTGAACATCGTGACC
GACTCCCAGTACGCCCCTGGCATCATCCAGCTGCCCAGACCCCGACAAGTCCGA
GTCCGAGCTGGTGAACCAGATCATCGAGCAGCTGATCAAGAAGGAGCGCG
TGTACCTGTCCTGGGTGCCCGCCACAAGGGCATCGGCGGCCAACGAGCAG
GTGGACAAGCTGGTGTGTCCTCCGCATCCGCAAGGTGCTGTTCCTGACGG
CATCGACAAGGCCCAGGAGGAGCACGAGAAGTACCACTCCAACTGGCCGCG
CCATGGCCTCCGAGTTCAACCTGCCCCCATCGTGGCCAAGGAGATCGTG
GCCTCCTGCGACAAGTGCCAGCTCCCACCCACTGGAGGGCA
GGACTGCTCCCCCCGGCATCTGGCAGTGGACCTGCCACCCACTGGAGGCCGAG
AGATCATCCCGAGACCGGCCAGGAGACCGGCCTACTTCATCCTGAAGCT
GGCCGGCCGCTGGCCCCGTGAAGGTGATCCAACAACGGCTCCAACT
TCACCTCCGGCCATCCCTACAACCCCCAGTCCCAGGGCGGCGGCATCCAGCAG
GAGTTCGGCCATCCCTACAACCCCCAGTCCCAGGGCGGGTGGTGAGTCCAT
GAACAAGGAGCTGAAGAAGAATCATCGGCCAGATGGCCGTGTTCATCCACAACTTCAAGCGC
ACCTCAAGACCGGCCGTGGGCGGCTACTCCGCGAGGCCATCATCGACATCAT
AAGGGCGGCCATCGACATCCAGACCAAGGAGCTGCAGAAGCAGATCATCAAGATCC
CGCCACCGACATCCAGACCAAGGAGCTGCAGAAGCAGATCATCAAGATCC
AGAACTTCCGCGTGTACTACCGGTGGAAGGGCCCGCCGCAAGGGC
CCCGCCAAGCTGCTGTGGAAGGTGGTGCCCCGCCGCAAGGCAA
CTCCGACATCAAGTGCTTCAACTGCGGCCGCCGCCAAGGCCAAGATCATCAAGGACT
ACGGCAAGCAGATGGCCGGCGACTGCGTGCCGGCGCCCAGGACGAG
GACTAA
```

Fig. 19D (continued)

M.con.gag (group M consensus gag)

MGARASVLSGGKLDAWEKIRLRPGGKKKYRLKHLVWASRELERFALNPGLLETSEG CKQIIGQLQPA
LQTGSEELRSLYNTVATLYCVHQRIEVKDTKEALEKIEEEQNKSQQKTQQAAADKGNSSKVSQNYPIVQN
LQGQMVHQAISPRTLNAWVKVIEEKAFSPEVIPMFSALSEGATPQDLNTMLNTVGGHQAAMQMLKDTINE
EAAEWDRLHPVHAGPIPPGQMREPRGSDIAGTTSTLQEQIAWMTSNPPIPVGEIYKRWIILGLNKIVRMY
SPVSILDIRQGPKEPFRDYVDRFFKTLRAEQATQDVKNWMTDTLLVQNANPDCKTILKALGPGATLEEMM
TACQGVGGPGHKARVLAEAMSQVTNAAIMMQRGNFKGQRRIIKCFNCGKEGHIARNCRAPRKKGCWKCGK
EGHQMKDCTERQANFLGKIWPSNKGRPGNFLQSRPEPTAPPAESFGFGEEITPSPKQEPKDKEPPLTSLK
SLFGNDPLSQ

Fig. 19E